Author/s:
McKenzie, R;Dunt, D;Yates, A

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Patient intention and self-reported compliance in relation to emergency department attendance after using an after hours GP helpline

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Abstract: (249 words)

Objective(s): To determine Emergency Department attendance and compliance with GP advice following a call to an after hours telephone triage and advice service.

Methods: A descriptive study of users' of an after hours helpline self-reported ED attendance and compliance with GP recommendation, based on routinely collected service data and telephone survey results for 2,783 callers in 2011-2012.

The outcome measure was self-reported health service utilisation following advice from a GP on an after hours helpline.

Results: One third of the sample - 934 callers - intended to visit the ED. Of these 504 (54%, 95% CI 50.7% - 57.2%) reported taking other less urgent options. The GP assessment confirmed the original intention for 224 callers (24%, 95% CI 21.2% - 26.9%). However 151 patients (16%, 95% CI 13.8% - 18.6%) did attend the ED as they had originally intended despite the GP's recommendation to seek less serious care, while a further 55 patients (6%, 95% CI 4.4%-7.6%) assessed by the GP as requiring ED care chose a less serious option. Fifty-five per cent of all callers who attended ED did not intend to visit the ED prior to their call. The overall net result was a small reduction in ED attendance compared with original intentions.

Conclusions: An after hours GP helpline may divert some callers intending to go to ED to other care. However patient non-compliance may limit the capacity of TTAS to reduce demand for ED. Further research is needed to better understand the effect of the service.

Key words: emergency departments, after hours care, patient compliance, telehealth

Introduction

There has been considerable interest and some controversy in Australia surrounding the impact of telephone triage and advice services (TTAS) on health service utilisation, particularly in relation to use of Emergency Department (ED) services.[1-3] A nurse-led TTAS, *healthdirect* was first established in Western Australia in 1999,[4] followed by state-based services in Queensland and Victoria in 2006,[5] expansion of *healthdirect* into NSW, ACT, S.A and NT in 2008 under the auspice of the National Health Call Centre Network,[2] and finally the addition of a national after hours GP consultation and referral element to all nurse TTAS, *the afterhours GP helpline* (AGPH), in 2011.[6] The operational model of the AGPH is described in Box 1. In common with other TTAS around the world, the AGPH aims to improve access to primary health care advice in the after hours period and assist in managing demand for face-to-face healthcare services.[7,8] The AGPH handled more than 300,000 calls during the two-year study period, averaging approximately 3000 calls per week. More women than men used the service and the largest patient group was children.[9]

[Box 1 need to be close to beginning of article]

The question of the impact of TTAS referrals on ED presentations has been studied and debated, both in Australia and internationally. In contention are management of high demand for ED services and the appropriateness of attendance at ED by members of the general public referred by telephone triage.[1,2,10-15]

Evidence is equivocal about the impact of TTAS on ED use. A 2003 systematic review found that after hours TTAS reduced immediate medical workload and identified studies that showed either no effect or a small reduction in ED attendance.[16] Bunn and colleagues' (2004) systematic review found that TTAS had no impact on ED utilisation with the exception of one study in which an increase in ED use reulted from TTAS.[17] However a systematic review of TTAS health service impact accompanied by a survey of Canadian health call centres identified two studies and three program evaluations that showed reductions in ED use.[18] In a more recent systematic review, Fry (2011) found that TTAS reduced ED utilisation in the after hours period, a conclusion largely based on evaluations of the early years of NHS Direct in England.[19] The systematic review undetaken by Ismail and colleagues (2013) found that TTAS had negligible impact on attendance at Accident and Emergency Departments.[12] NHS Direct has since been replaced by NHS111, which in an evaluation of 4 pilot sites, was found to have no effect on ED attendances and to increase urgent and emergency service activity overall.[20]

The path between receiving advice from a TTAS and acting upon that advice is neither simple nor well understood, although increasing attention is given to what could be termed the patient or user journey. An important mediating factor in the path from patient intention to final action is the patient's own agency in determining whether to follow the advice received from the telephone nurse or GP. Patient compliance with telephone triage

and advice delivered by nurses has been extensively studied, with less focus on delivery of telephone advice by GPs as part of TTAS, reflecting that GP involvement in delivery of telephone advice is a less common model.[8,12,13,21,22] Compliance with telephone advice has been found to be influenced by a range of factors including inaccurate recall of advice; changes in symptoms post-call; confidence and trust in the advice received; original patient expectations of care needed and access to healthcare services.[13,22,23] The urgency and nature of the care recommended may also influence user compliance, with two systematic reviews finding that callers to TTAS are more likely to comply with advice to attend ED or undertake self-care than they are to visit a GP.[13,.22] Communication skills of the telephone clinician and health literacy of the caller are other factors which are receiving increased attention as potential contributors to compliance with telephone advice and more appropriate use of emergency care. [22,24,25]

Compliance rates with TTAS advice have been found to be highly variable, with ranges reported from 56-98%.[13,22] Whether callers are more likely to comply with physician advice than nurse advice is also unclear, with limited evidence showing no significant differences in relation to urgent care but higher rates of compliance for a clinic visit when recommended by a paediatrician.[8] In an Australian study Sprivulis and colleagues (2004) examined compliance with nurse TTAS recommendations to attend ED in Perth, Western Australia, and found 61% complied with the nurse advice while a further 9% of callers went to ED despite advice to seek a lower level of care.[26] In contrast Ng et al (2012), at a later date in

the same location found more than 50% of TTAS users were non-compliant and attended ED when advised it was not necessary.[10] Despite the variability of compliance findings it is clear that TTAS callers do not always follow the telephone nurse or GP's advice and this in turn will influence the extent to which TTAS can affect ED utilisation.

To date no studies have been published on the effect of a GP telephone advice and referral on ED attendance in Australia. Given the policy significance of this area of health service utilisation, this study aimed to determine the impact of an after hours GP telephone service on ED use and compliance with telephone GP advice, as reported by users of the service.

Methods

This study was undertaken as part of a larger mixed methods evaluation of the AGPH (Centre for Health Policy, 2013, unpublished). Studies undertaken as part of the evaluation of the AGPH have received approval from the Human Research Ethics Committee of the Melbourne School of Population and Global Health of the University of Melbourne, approval numbers 1339934.1 and 1239079.1.

A descriptive study of the "patient journey" of callers transferred from nurse triage to the AGPH was undertaken using routinely collected data on caller intention, nurse disposition and GP outcome (disposition) from the service operator and data from monthly CATI

surveys of ~~2,783~~ adult users of the AGPH in 2011-2012, undertaken by a private research company on behalf of the service commissioner, Healthdirect Australia. Wholly nurse-handled calls were not included in this study.

These data were provided to the researchers with the authorisation of the service commissioner in a de-identified Excel spreadsheet containing only caller intention, nurse disposition, GP referral and caller reported follow up action. No information on time of call, age, gender or residential location was contained in the data set.

Callers to the AGPH were routinely asked by the nurse who initially triaged the calls "What would you have done today/this evening if you hadn't called the helpline?" The answer was coded and recorded according to a predetermined framework of actions. Callers who participated in ~~the~~ subsequent CATI surveys had agreed during their call to being contacted in the month following for the purpose of evaluation. A question in the follow up survey (covering a range of questions relating to satisfaction and compliance) asked callers "what action did you take after speaking to the doctor on the helpline?" As the patient may have taken more than one action, for example, self-care and then a visit to a GP the next day, multiple user actions were sometimes recorded. The surveyor coded the response using a slightly different coding framework to that used to record intention in the original call. The resulting data set, provided to the researchers by the service commissioner, combined user intention, nurse disposition, GP outcome and self-reported patient actions taken. The main

categories for possible steps in the pathway are shown in Figure 1.

[Figure 1 here]

To facilitate analysis of the available patient journey data the researchers re-coded two steps in the pathway. Multiple patient final actions were reduced to a single action, that being "the most serious action taken." Categories relating to the GP outcomes were then re-coded to enable better alignment with the categories used to code callers' self-reported most serious action. Emergency department attendance (either by personal means or via ambulance) and home/self-care categories remained constant throughout the recorded patient journey when the dataset categories were re-coded for better fit, although a GP outcome could include a referral for both self-care and health service care.

Emergency department attendance was therefore selected as the main focus for this study, being the most reliable and policy relevant pathway from caller intention to action, mediated by interaction with the AGPH for which data was available. The main outcome measure was self-reported health service utilisation following assessment and care recommendation from a GP on an after hours primary care helpline.

Statistical analyses

Data were collated, re-coded and frequencies calculated using MS Excel. Proportions and 95% confidence intervals for proportions of patients based on intentions and reported

action in relation to ED attendance were calculated in Stata 13.1 (StataCorp).

Results

Complete patient journey data were obtained for 2,783 adult users of the AGPH (i.e. those who were triaged by a nurse and then transferred to the telephone GP). Of these, 934, or approximately one third of callers, indicated they intended to visit an ED or call an ambulance had they not telephoned the helpline. The remaining 1849 callers indicated an intention to use self-care (20.3%) or primary healthcare providers (27%) or they didn't know what to do (19.1%). Table 1 shows the beginning and end points of the patient journey based on use of the AGPH, with intention of the caller shown against the final most serious self-reported action the caller took in regard to the health issue that prompted their call. A total of 833 callers (30%) reported attending the ED, which included 174 callers who hadn't known what to do when they first called the service. It also included a further 284 callers who indicated a different intention (contact a GP or healthcare provider or home/self-care) when first making the call. Just over a quarter, 719 callers, reported home/self-care as their final action. Of all callers surveyed, 13.5% (375/2783, 95% CI 12.3% - 14.8%) who had indicated an intention to go to ED reported ED attendance; 20% (559/2783 95% CI 18.6% – 21.6%) who intended to go to ED did not attend ED after speaking to the telephone GP; a further 16.5% (458/2783, 95% CI 15.1% - 17.9%) attended ED after originally intending to take a less serious action, and approximately 50% (1,391/2783, 95% CI 48.1%-51.8%) did not

intend to go to ED and confirmed they had not attended ED after speaking to the telephone GP.

[Table 1 here]

Table 2 presents the final actions of those callers whose original intention was to attend ED, compared with GP outcomes. Of the 934 callers who indicated they intended to visit ED or call for an ambulance, 504 (54% - orange shading, 95% CI 50.7% - 57.2%) were diverted to other service options. The GP assessment endorsed the patient's original intention to attend ED for 224 callers (24% - pink shading 95% CI 21.2% - 26.9%). However 151 patients (16% - blue shading 95% CI 13.8% - 18.6%) did attend the ED as they had originally intended despite the GP's recommendation to seek a less serious care option, while a further 55 patients (6% -green shading, 95% CI 4.4%-7.6%) assessed by the GP as requiring ED care chose a less serious option. Therefore 206/934 callers (22%) who intended to go to ED did not follow the GP's advice. Further, more than half of those who attended ED had not originally attended to visit the ED (55%, 458/833). However, the overall net effect of the AGPH on ED utilisation, taking account of those callers who attended ED despite not having intended to and the diversion to less serious care of those who intended to go to ED was a modest reduction of 101 patients, representing 3.6% (101/2783) of the sample .

[Table 2 here]

Discussion

The findings demonstrate the difficulty of quantifying the effect of GP helpline advice on subsequent ED attendance by callers. While this study found that GPs on an after hours helpline diverted more than half of callers intending to go to ED to a less urgent service option, it also showed that telephone GPs advised some callers to attend ED who had not initially realised the urgency of their condition and that other callers, despite being advised by GPs to take a less serious course of action, still proceeded to the ED. Taken together the findings found an overall modest net reduction in reported ED attendance was achieved compared to caller original intention. This is consistent with findings of only a very small number of international studies of TTAS.[18] The value of comparison with the mixed international evidence[12,16,17,19,20] may be limited, however, as the AGPH model of universal nurse triage followed by GP assessment of urgent but non-emergency categories of callers is different in various ways to other TTAS models identified. The findings point to the importance of further Australian research to better understand the impact on health care service use of this less common TTAS model during its establsihsment phase.

There is a strong focus in healthcare literature and the media on the capacity of telephone helplines to reduce demand by low urgency patients for ED care. [1-3, 15] This is often accompanied by debate as to the causes of ED overcrowding with some arguing that a shortage of beds for admission leads to backlog in ED rather than a build up of non-urgent

patients, thereby limiting any potential reductions by TTAS or other primary care reforms.[2] This debate tends to divert attention from two related and important issues.

Firstly, there is little acknowledgement in the literature that some patients receive advice from TTAS to attend ED because their condition is assessed as urgent and this timely action may prevent escalation of the condition, improve the ourtcome for the patient and reduce subsequent health care costs. This may be especially important for rural consumers without access to other after hours care options.

Secondly it is apparent that the effect of services such as the AGPH is mediated by the extent of consumer compliance with telephone advice. Self-reported attendance at ED was higher than that recommended by telephone GPs because a proportion of callers did not comply with the advice received. It is possible that some callers experienced an escalation of symptoms after completing the call and followed safety net advice to attend ED, or that others, unable to access recommended after hours primary care, visited an ED instead. But for others still, it is likely that one or more factors relating to expectations, recall, understanding of or confidence in the advice received, or convenience influenced their subsequent non-compliant healthseeking behaviour.[13,22,23] Confidence in the advice received may in turn be affected by the perceived quality of advice or accuracy of clinical assessment.[22] Recent reviews[12,22] and a UK study of TTAS ED referrals[24] have called for a greater empahsis on TTAS provider communication skills, education of the community on

appropriate use of emergency healthcare and further research on user motivation for seeking ~~out~~ emergency care. Again, more research is needed in the Australian context to understand non-compliance with TTAS advice and consumer motivation for attending ED.

Limitations

The study has several limitations. The first is its reliance on self-reported use of health care services and compliance with advice received from a telephone GP. Self-report may be subject to recall bias and given that the follow up survey was conducted in the month following the call it is possible that users of the AGPH had gone on to access health services relating to this or other conditions at a later point which may further cloud recall of immediate service utilisation. Studies using linked administrative data such as attendance records and insurance claims have been found to show lower compliance than self-reported adherence.[25] An Australian study of compliance with TTAS advice and ED attendance using linked data found higher rates of compliance with TTAS advice to attend ED than this study.[26] Linked data studies can provide a more robust picture of Australian healthcare utilisation following TTAS use and should be pursued in the future. It is also possible that callers who agreed to be contacted for evaluation purposes may not be representative of all AGPH users.

The absence of contextual information on the nature of presenting complaints,

demographic profile and importantly, health outcome data such as hospital admissions for AGPH patients in this sample prevents any assessment of the appropriateness of the referral decision of the telephone GP. It also limits the extent to which the behaviour of non-compliant callers who took a different course of healthcare action to that recommended by the telephone GP can be understood. As noted, appropriateness of ED referral is a common element in the debate about TTAS and this cannot be examined without a more complete picture of the patient journey from the presenting problem and intention to seek care, via telephone assessment and referral, through to health service use and finally, health issue resolution. Comprehensive patient journey research requires not only linked data sets, but information on consumer characteristics, decision-making and experience.[25]

A further limitation is the disparity in coding categories along the patient journey from intention to final action, which in part led to a relatively narrow focus on ED attendance rather than impact on utilisation of after and in-hours primary care services. Consistency in data collection categories throughout the user journey is essential for a full assessment of impact of TTAS on healthcare utilisation. Nonetheless the constancy of coding of emergency care has provided useful data in an area of health policy relevance and community interest.

Conclusion

Overall this study suggests that GP advice delivered in an after hours TTAS may modestly

reduce ED attendance. However the concerning level of non-compliance with GP advice reported by users suggests that caller non-compliance can limit the extent to which TTAS can reduce unnecessary ED attendance. More research is needed into Australia's nurse and GP TTAS, preferably using linked data and consistent data collection categories across the user journey to gain an accurate picture of the impact of these services on the healthcare system. Linked data would ideally include information on the presenting health problem and basic patient demographic details. A better understanding of the drivers of adherence to GP and nurse telephone advice and consumer motivations for using ED services is also required.

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